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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,679	05/17/2005	Yong-Woo Kim	047559/286038	1924
826 7590 10/17/2007 ALSTON & BIRD LLP BANK OF AMERICA PLAZA 101 SOUTH TRYON STREET, SUITE 4000 CHARLOTTE, NC 28280-4000				
			EXAMINER GREENE, JASON M	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/517,679

**Applicant(s)**

KIM ET AL.

**Examiner**

Jason M. Greene

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,11-19 and 22-34 is/are rejected.
- 7) ☒ Claim(s) 8,10,20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/22/05;10/18/06</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### *Claims*

1. With regard to claim 1, the Examiner suggests Applicants rewrite the phrase "the catalytic filter" in line 7 as "the oxidation catalyst" to correct an apparent typographical error.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 9, 11, 12 and 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba (US 6,912,847 B2) in view of German Patent Application Publication DE 44 10 353 A1.

With regard to claims 1-3, 5, 12, 22, 24 and 29, Deeba discloses a catalytic filter for removal of soot particles from diesel engine exhaust comprising an oxidation catalyst (12) positioned upstream of the catalytic filter (15), prepared by treating a platinum

Art Unit: 1797

group metal (platinum, palladium, rhodium) salt and a transition/alkali metal (base metal) salt with water to obtain a first colloidal mixture solution, which is then washcoated to a catalyst-support-coated monolithic ceramic substrate, and a catalyzed wall-flow filter positioned downstream of the oxidation catalyst, prepared by treating a platinum group metal (platinum or palladium) salt and a metal salt mixture including at least one selected from a first group of catalyst metals (platinum doped on ZSM-5) to enhance oxidation activity and at least one selected from a second group of catalyst metals (V,W,Ag,Re,Ce,Fe,Mn,Ni,Cu) to decrease a combustion temperature of soot particulates, with water to obtain a second colloidal mixture solution, which is washcoated on a catalyst-support-coated wall flow filter, and wherein the metal salt mixture used for the catalyzed wall-flow filter further comprises at least one selected from a third group of catalyst metal (one of V and W used as part of the second group above) to prevent oxidation of sulfur dioxide, wherein the catalyst support comprises activated alumina, silica and/or titania (see col. 4, lines 31-34), and wherein the catalyst-support-coated monolithic ceramic substrate comprises a flow-through ceramic honeycomb monolith, and the catalyst-support-coated-wall-flow filter comprises a ceramic honeycomb filter in Figs. 1 and 3 and col. 7, line 10 to col. 10, line 59.

Deeba does not disclose the washcoating solutions comprising a water-soluble polymer and a reducing agent, but DE 44 10 353 A1 teaches washcoating catalysts on supports using a solution comprising a water-soluble polymer (polyvinylalcohol) and a reducing agent (methanol) in the English language abstract, page 4, lines 24-29 and Table 1 (especially Example 7).

Art Unit: 1797

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the water-soluble polymer and reducing agent of DE 44 10 353 A1 into the filter of Deeba to provide a well dispersed colloidal solution of the metals, as suggested by DE 44 10 353 A in the English language abstract.

With regard to claims 4 and 23, Deeba discloses the catalyst support containing titania and silica in col. 4, lines 31-34, but does not disclose the density of the weight ratio.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the density and weight ratio of the catalyst support material for an intended application through routine experimentation.

With regard to claims 6 and 25, Deeba teaches the claimed metal salts (explicitly Ce), but does not teach the recited weight ratio.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the weight ratio between the platinum group metal and the transition/alkali metal for an intended application through routine experimentation.

With regard to claims 7, 9, 11 and 26-28, Deeba is silent as to the specific amounts of each catalyst, but it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the amounts of each catalyst for an intended application through routine experimentation.

4. Claims 13-19 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba (US 6,912,847 B2) in view of German Patent Application Publication DE 44 10 353 A1.

With regard to claims 13-18 and 30-33, Deeba discloses a method of preparing a catalytic filter for removal of soot particulates from diesel engine exhaust comprising treating a platinum group metal (platinum, palladium, rhodium) salt and a transition/alkali metal (base metal) salt with water to obtain a first colloidal mixture solution, which is then washcoated to a catalyst-support-coated monolithic ceramic substrate, followed by calcination at high temperature to obtain an oxidation catalyst, and treating a platinum group metal (platinum or palladium) salt and a metal salt mixture including at least one selected from a first group of catalyst metals (platinum doped on ZSM-5) to enhance oxidation activity and at least one selected from a second group of catalyst metals (V,W,Ag,Re,Ce,Fe,Mn,Ni,Cu) to decrease a combustion temperature of soot particulates, with water to obtain a second colloidal mixture solution, which is washcoated on a catalyst-support-coated wall flow filter, followed by calcination at high temperature to obtain a catalyzed wall-flow filter, wherein the metal salt mixture used for the catalyzed wall-flow filter further comprises at least one selected from a third group of catalyst metal (one of V and W used as part of the second group above) to prevent oxidation of sulfur dioxide, wherein the catalyst support comprises activated alumina,

Art Unit: 1797

silica and/or titania (see col. 4, lines 31-34) Figs. 1 and 3 and col. 7, line 10 to col. 10, line 59.

Deeba does not disclose the washcoating solutions comprising a water-soluble polymer and a reducing agent, but DE 44 10 353 A1 teaches washcoating catalysts on supports using a solution comprising a water-soluble polymer (polyvinylalcohol) and a reducing agent (methanol) in the English language abstract, page 4, lines 24-29 and Table 1 (especially Example 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the water-soluble polymer and reducing agent of DE 44 10 353 A1 into the method of Deeba to provide a well dispersed colloidal solution of the metals, as suggested by DE 44 10 353 A in the English language abstract.

With regard to claims 19 and 34, Deeba teaches the claimed metal salts (explicitly Ce), but does not teach the recited weight ratio.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the weight ratio between the platinum group metal and the transition/alkali metal for an intended application through routine experimentation.

***Allowable Subject Matter***

Art Unit: 1797

5. Claims 8, 10, 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record does not teach or fairly suggest the filters of claims 8 and 10 or the methods of claims 13 and 14 comprising the recited combinations of catalytic metals.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Saito et al., Tashiro et al., Abe et al., Twigg et al., Andorf et al. and Yoshimoto et al. references disclose similar filters and methods.

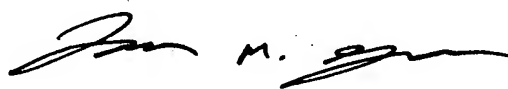
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jason M. Greene  
Primary Examiner  
Art Unit 1797

  
10/13/07

jmg  
October 13, 2007